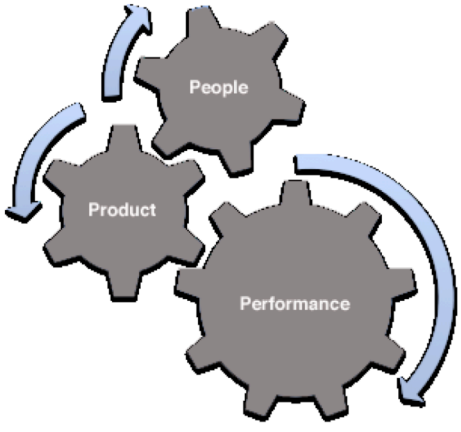
SERVICE MANUAL

Manual Addendum

HU-80-1625

Supersedes 1635 Manual



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We appreciate your business and hope you enjoy your Samuel Jackson King Mesa Gas-Fired Humidaire Unit

This manual contains information on the installation, startup, and operation of your Humidaire Unit. Included is information on:

- Humidaire operation.
- Electrical installation.
- Gas piping and supply.
- Water supply and drainage.
- Humidaire Unit dimensions.
- Maintenance and troubleshooting.

When taking delivery of your new Humidaire Unit, take a moment to familiarize yourself with the location of the less obvious items in the shipment. This service manual is normally shipped in the *BOX OF CONTROL PARTS*. Included in this box are the air temperature thermocouple and shielded cable thermocouple hookup wire. If your Humidaire Unit will be used to add moisture to lint cotton a 14900A Lint Flue Scanner will also be included in this box.

We suggest that you check the contents of the box of control parts and then store them in a safe place until installation time. This will help prevent some of the items from being misplaced or being used for other jobs. Humidaire Unit installation will then go smoothly with no delays waiting or looking for missing parts.

If the Humidaire Unit is part of a Samuel Jackson Conditioning Hopper Moisture System or a Steamroller System, more detailed information for your system will be shipped to you under separate cover.

IS STARTUP ASSISTANCE PROVIDED?

Depending upon your location, a startup and inspection service may be provided with your new Humidaire Unit free of charge by Samuel Jackson, Inc. Please contact us to make arrangements or for questions regarding startup services.

In the future when you require service, technical support, or parts please contact us by phone, fax, or email. Our engineers and service people are available to assist you in obtaining the best performance from your Samuel Jackson, Inc. products.

Again, thanks for choosing a Samuel Jackson King Mesa Gas-Fired Humidaire Unit!

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READ THIS CAREFULLY BEFORE OPERATING THIS SAMUEL JACKSON PRODUCT!

The Samuel Jackson product line consists of sophisticated technology capable of greatly enhancing a gin's productivity and efficiency. Improper use of these products could adversely affect those very same factors and potentially cause injury to gin personnel. For this reason, we include an extensive manual with every product. These manuals outline the proper and safe operating procedure for their respective product. **Do not operate any Samuel Jackson product without first reading the entire manual and all accompanying information.**

Sometimes there are updates added at the customer's discretion to products already in the field. We always refer customers to our website, www.samjackson.com for the latest product information. The latest manual can be downloaded or printed from the website free of charge. In addition to printed literature, the website includes training videos on several popular products. When available, these videos are highly recommended for viewing before operating a respective product. If you do not have internet access, give us a call and we will gladly send you the latest product information.

DANGER:* Please read and understand all the warnings below before operating or maintaining a Samuel Jackson product. If you do not understand, call Samuel Jackson at 806-795-5218 before proceeding. Failure to do so could result in injury or even death. (*Si usted no entiende, llamar a Samuel Jackson en 806-795-5218 antes de proceder. La falta de hacer tan podía dar lugar alesión o aún a muerte.)

Electrical.
Most Samuel Jackson products use supply voltage between 110 and 480 volts AC. These levels are considered high voltage and are extremely dangerous. The ignition transformer voltage output is much higher than this.

Fire.
Samuel Jackson Humidaire Units and Heaters are combustion-based products. They ignite and burn fuel during operation. These products can reach very high temperatures inside and out. Allow combustion based products 15 minutes to cool before attempting any work.

Automatic Flame Ignition.
Some Samuel Jackson Humidaire Units and Heaters use technology to ignite automatically. If you do not see a flame, it does not mean that respective product is not in operation.

Access Doors.
Samuel Jackson products have access doors for added convenience of product maintenance. Access doors must not be opened while the equipment is in operation. Access doors should also remain closed while any connected equipment such as a fan or conveyor is in operation.

Moving Parts.
Many Samuel Jackson products have moving or rotating parts. These parts could form pinch points or grab loose clothing or jewelry. Do not reach across or into any product while in operation.

Replacement Parts.
When repairing or maintaining this equipment, use only Samuel Jackson approved parts.

Do not work on any Samuel Jackson product without first following OSHA Lockout/Tagout procedures. Confirmation by a licensed electrician that there is no electricity present is highly recommended. We recommend using a Samuel Jackson Authorized Technician for all work Samuel Jackson products. Additional safety information is located throughout this manual and should be read carefully before operating this Samuel Jackson product. If you have any questions about how to properly operate a Samuel Jackson product, please call 806-795-5218 before proceeding.

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SPECIAL SAFETY FEATURES OF HU-80-1625 GAS- FIRED HUMIDAIRES

The HU-80-1625 has been specifically designed to meet AS 3814-2009. The HU-80-1625 is operationally the same as the HU-80-1635 except for combustion control. Combustion control is handled by a Honeywell RM7898 control instead of a PLC. Due to the use of the Honeywell 7898 combustion control instead of a PLC many of the diagnostics described in the HU-80-1635 manual are not available in the HU-80-1625. The gas train and electrical schematics included here supersede those found in the HU-80-1625 manual.

- A valve leak test is preformed at the beginning of each ignition sequence and again at the end of each shutdown sequence.
- An airflow switch, which measures the difference in pressure, sensed by orifices pointing upstream and downstream is interlocked with the Honeywell flame control.
- A fan interlock relay is interlocked with the Honeywell flame control. Ignition is not possible if the main plant control system does not report the fan(s) are running.
- The gas high pressure and gas low pressure switches are a manual reset type.
- A timed air purge to achieve 5 air changes prior to opening of any gas valve(s).
- Upon ignition or flame failure the Honeywell RM7898 reports an alarm condition to the Humidaire's PLC that appears on both the Humidaire's touch screen and the Moisture Mirror touch screen (if equipped) alerting the operator to the fault.
- A high limit temperature switch for the moist air line using a Type-J thermocouple. Connect Type-J thermocouple using thermocouple wire to the Omron high limit temperature switch with white on terminal 1 and red on terminal 2.

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AIR FLOW SWITCH AND FAN INTERLOCK

There are two airflow-sensing devices employed by the HU-80-1625 Humidaire control system. The mechanical airflow switch is connected to the Honeywell RM7898 combustion control unit per AS-3814. An additional analog sensor is connected to the Humidaire PLC to allow for simplified diagnostics of airflow problems. Only the mechanical airflow switch has direct control within the combustion safety device.

In cotton gins it is typical for the fans that provide the combustion air for the Humidaire to be controlled by a master plant control system. A fan interlock relay is provided and MUST BE USED for safe operation of the Humidaire. This interlock is connected to the Honeywell RM7898 flame control and no ignition can occur unless it is satisfied.

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ERRORS AND ALARMS EXPLANATION
HU-80-1625 GAS-FIRED HUMIDAIRE

ERROR 157

EXTERNAL FLAME CONTROL ALARM: The Honeywell RM7898 combustion control has detected an unsafe condition and shut down the burner. Check the display on the Honeywell RM7898 for more details. If the Honeywell RM7898 has been replaced with a substitute flame control system check the alarm or fault notification of that device.

Some alarms are caused by high or low gas pressure. These switches are **NOT** directly monitored by the PLC and will cause a generic flame failure alarm. Verify that these switches have been reset by pressing the red reset button on each switch. If the orange light is present within the switch enclosure, then the switch is operational. If not, then the switch will need to be reset or the gas pressure is not within bounds.

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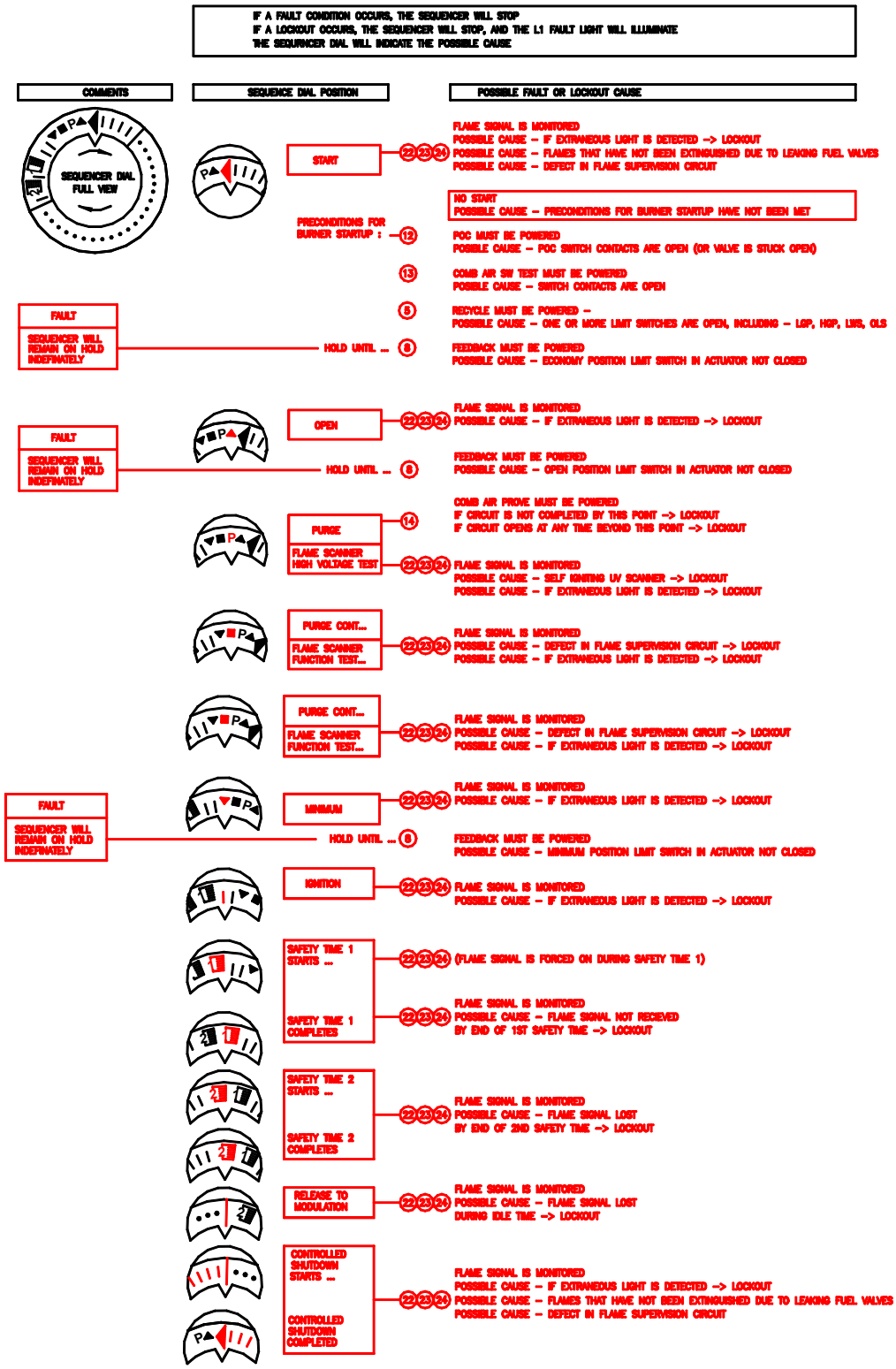
IF A FAULT CONDITION OCCURS, THE SEQUENCER WILL STOP
IF A LOCKOUT OCCURS, THE SEQUENCER WILL STOP, AND THE L1 FAULT LIGHT WILL ILLUMINATE
THE SEQUENCER DIAL WILL INDICATE THE POSSIBLE CAUSE
COMMENTS
SEQUENCE DIAL POSITION
POSSIBLE FAULT OR LOCKOUT CAUSE
SEQUENCER DIAL FULL VIEW
START
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – IF EXTRANEOUS LIGHT IS DETECTED –> LOCKOUT
POSSIBLE CAUSE – FLAMES THAT HAVE NOT BEEN EXTINGUISHED DUE TO LEAKING FUEL VALVES
POSSIBLE CAUSE – DEFECT IN FLAME SUPERVISION CIRCUIT
NO START
POSSIBLE CAUSE – PRECONDITIONS FOR BURNER STARTUP HAVE NOT BEEN MET
PRECONDITIONS FOR BURNER STARTUP :
POC MUST BE POWERED
POSSIBLE CAUSE – POC SWITCH CONTACTS ARE OPEN (OR VALVE IS STUCK OPEN)
COMB AIR SW TEST MUST BE POWERED
POSSIBLE CAUSE – SWITCH CONTACTS ARE OPEN
RECYCLE MUST BE POWERED –
POSSIBLE CAUSE – ONE OR MORE LIMIT SWITCHES ARE OPEN, INCLUDING – LGP, HGP, LWS, CLS
FEEDBACK MUST BE POWERED
POSSIBLE CAUSE – ECONOMY POSITION LIMIT SWITCH IN ACTUATOR NOT CLOSED
FAULT
SEQUENCER WILL REMAIN ON HOLD INDEFINATELY
HOLD UNTIL ...
OPEN
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – IF EXTRANEOUS LIGHT IS DETECTED –> LOCKOUT
FEEDBACK MUST BE POWERED
POSSIBLE CAUSE – OPEN POSITION LIMIT SWITCH IN ACTUATOR NOT CLOSED
PURGE
COMB AIR PROVE MUST BE POWERED
IF CIRCUIT IS NOT COMPLETED BY THIS POINT –> LOCKOUT
IF CIRCUIT OPENS AT ANY TIME BEYOND THIS POINT –> LOCKOUT
FLAME SCANNER HIGH VOLTAGE TEST
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – SELF IGNITING UV SCANNER –> LOCKOUT
POSSIBLE CAUSE – IF EXTRANEOUS LIGHT IS DETECTED –> LOCKOUT
PURGE CONT...
FLAME SCANNER FUNCTION TEST...
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – DEFECT IN FLAME SUPERVISION CIRCUIT –> LOCKOUT
POSSIBLE CAUSE – IF EXTRANEOUS LIGHT IS DETECTED –> LOCKOUT
MINIMUM
IGNITION
SAFETY TIME 1 STARTS ...
(FLAME SIGNAL IS FORCED ON DURING SAFETY TIME 1)
SAFETY TIME 1 COMPLETES
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – FLAME SIGNAL NOT RECIEVED BY END OF 1ST SAFETY TIME –> LOCKOUT
SAFETY TIME 2 STARTS ...
SAFETY TIME 2 COMPLETES
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – FLAME SIGNAL LOST BY END OF 2ND SAFETY TIME –> LOCKOUT
RELEASE TO MODULATION
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – FLAME SIGNAL LOST DURING IDLE TIME –> LOCKOUT
CONTROLLED SHUTDOWN STARTS ...
CONTROLLED SHUTDOWN COMPLETED
FLAME SIGNAL IS MONITORED
POSSIBLE CAUSE – IF EXTRANEOUS LIGHT IS DETECTED –> LOCKOUT
POSSIBLE CAUSE – FLAMES THAT HAVE NOT BEEN EXTINGUISHED DUE TO LEAKING FUEL VALVES
POSSIBLE CAUSE – DEFECT IN FLAME SUPERVISION CIRCUIT

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DEFAULT SETTINGS

HONEYWELL 7898 SETTINGS:
Password: 78
VP when: BOTH
VP time: 00:15
Post time: 00:00
#1 Resistor: Clipped
#2 Resistor: Clipped
#3 Resistor: Intact

GAS LOW PRESSURE SWITCH (located on front of gas block): 50 mbar

GAS HIGH PRESSURE SWITCH (located on right of gas block): 350 mbar

VALVE PROVING SWITCH (located on back of gas block): 45 inch wc

Omron HIGH TEMPERATURE LIMIT SWITCH: 300 °F

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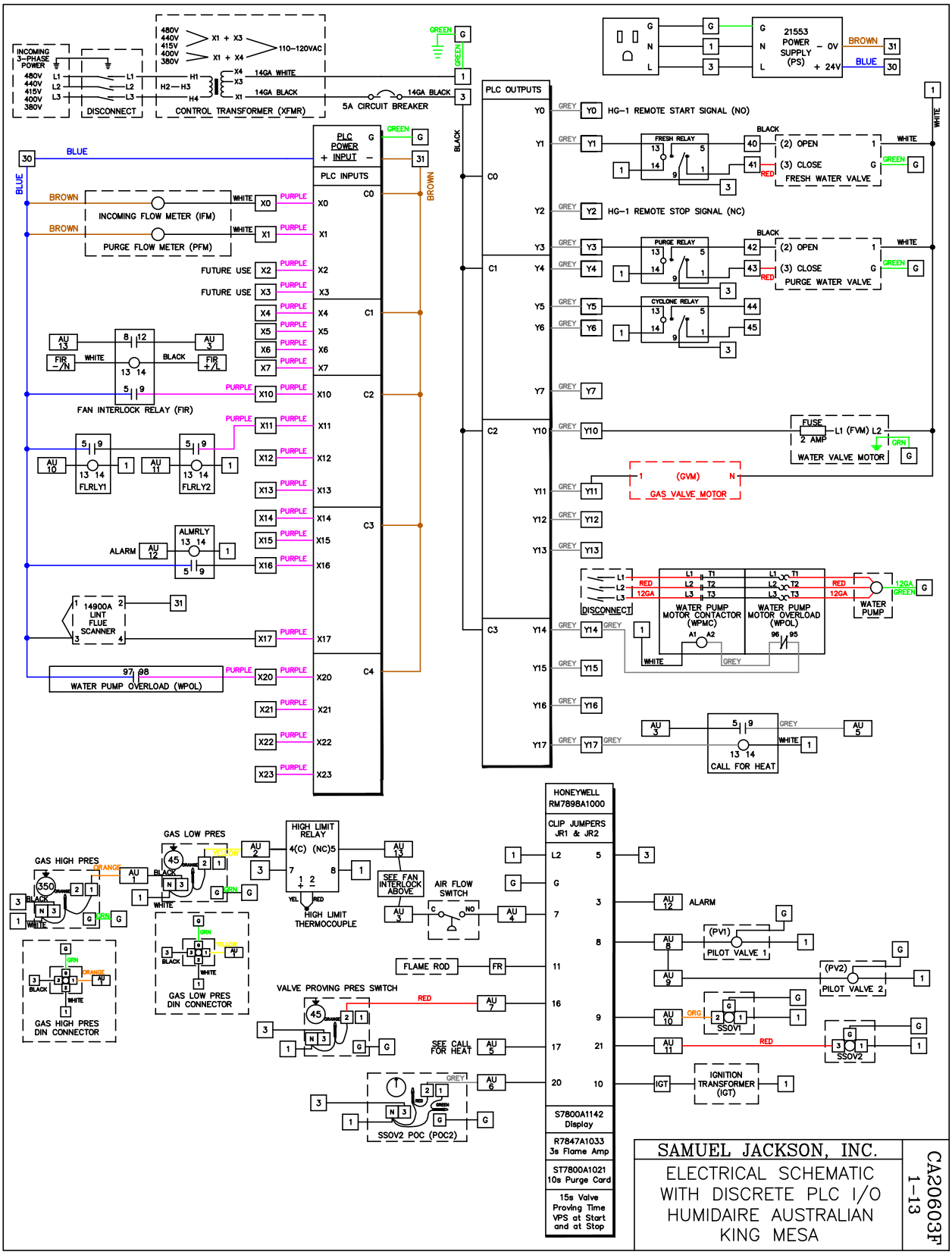

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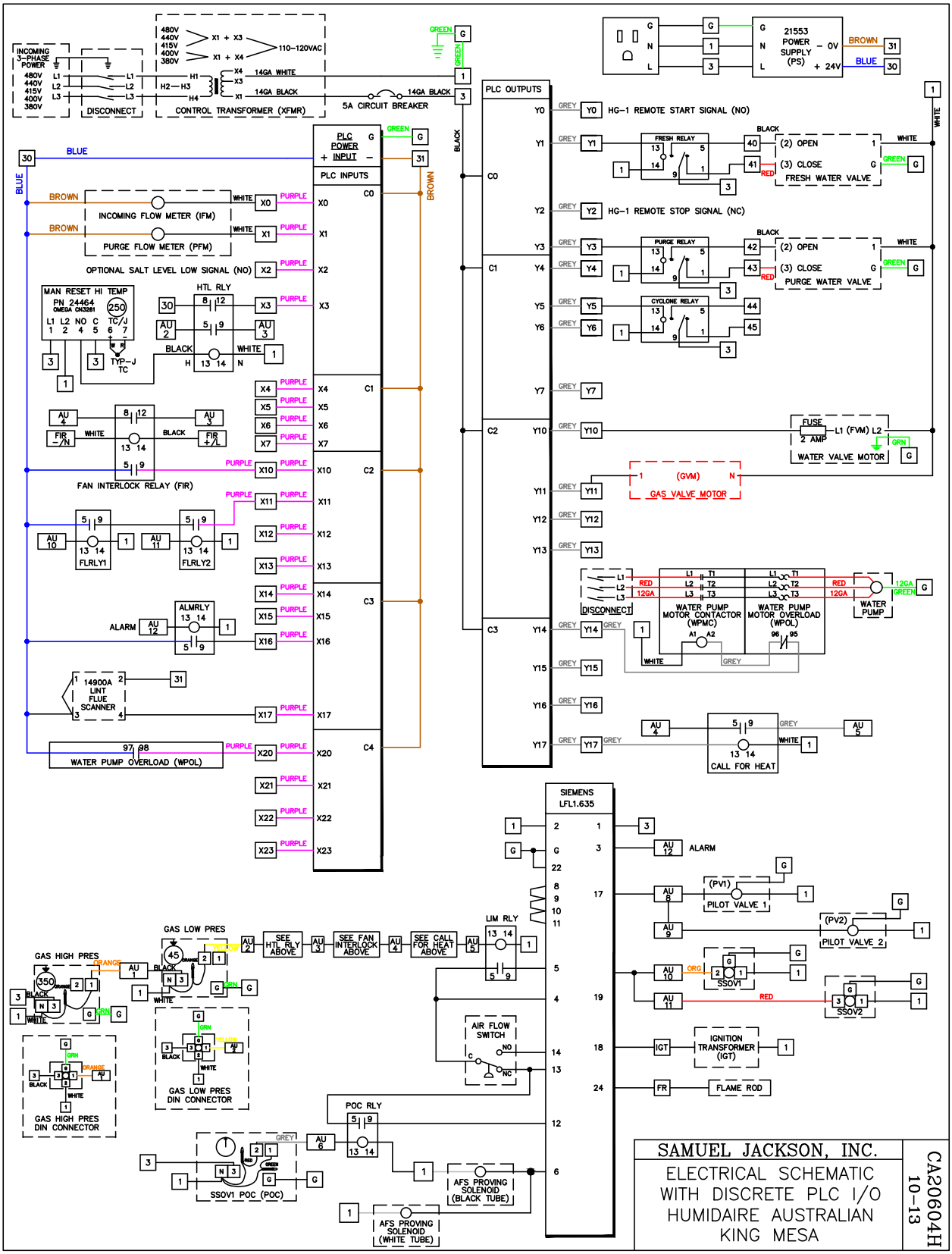

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HONEYWELL 7898 TO SIEMENS LFL1 WIRING CONVERSION

	Honeywell 7898	Siemens LFL1
120vAC	5	1
Neutral	L2	2
Ground	G	G & 22
Alarm	3	3
Valve Proving Pressure Switch	16	NA, Cut & Cap Wire
Flame Rod	11 or F	24
Pilot Valve(s)	8	17
SSOV1	9	19
SSOV2	21	19
Ignition Transformer	10	16
Limits & Call for Heat	See details below	
Proof of Closure Switch(s)	See details below	
3-Way AFS Proving Solenoid	See details below	

Limits & Call for Heat:

1) Remove wire between AU13 and term 8 on the fan interlock relay.
2) Remove wire between AU3 and term 5 on the call for heat relay.
3) Remove wire between AU2 and term 4 on old high temp limit.
4) Remove wire between AU13 and term 5 on old high temp limit.
5) Remove wire between 3 and term 7 on old high temp limit.
6) Remove wire between 1 and term 8 on old high temp limit.
7) Remove TC wires from term 1 & 2 on old high temp limit.
8) Remove wire between AU3 & Air Flow Switch.
9) Remove wire between AU4 & Air Flow Switch.
10) Remove wire between AU4 & term 7 on the 7898.
11) Remove wire between AU5 & term 17 on the 7898.
12) Add wire from AU4 to term 8 on the fan interlock relay.
13) Add wire from AU4 to term 5 on the call for heat relay.
14) Connect white TC wire to term 6 on new high temp limit.
15) Connect red TC wire to term 7 on new high temp limit.
16) Add wire from 3 to term 1 & term 5 on new high temp limit.
17) Add wire from 1 to term 2 on new high temp limit.
18) Add wire from term 4 on new high temp limit to 13 on new high temp limit relay.
17) Add wire from 1 to term 14 on new high temp limit relay.
18) Add wire from 30 to term 8 on new high temp limit relay.
19) Add wire from X3 to term 12 on new high temp limit relay.
20) Add wire from AU2 to term 5 on new high temp limit relay.
21) Add wire from AU3 to term 9 on new high temp limit relay.
22) Connect wire from AU5 to term 13 on new limits relay.
23) Connect wire from 1 to term 14 on new limits relay.
24) Connect term 5 on LFL to term 9 on new limits relay.
25) Connect term 4 on LFL to term 5 on new limits relay.
26) Connect term 4 on LFL to C on Air Flow Switch.
27) Connect term 14 on LFL to NO on Air Flow Switch.
28) Connect term 13 on LFL to NC on Air Flow Switch.

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POC Switch:	1) Remove wire between AU6 and term 20 on the 7898. 2) Add wire from AU6 to term 13 on new POC relay. 3) Add wire from 1 to term 14 on new POC relay. 4) Add wire from term 13 on LFL to term 5 on new POC relay. 5) Add wire from term 12 on LFL to term 9 on new POC relay.
3-Way AFS Proving:	1) Add wire from term 6 on LFL to coil of solenoid. 2) Add wire from 1 to coil of solenoid. 3) Disconnect tube from AFS and insert into NO of solenoid. 4) Connect tube from C of solenoid to AFS. 5) Repeat steps 1-4 for second AFS tube.
Remove LFL Modulation:	1) Add wire(s) to jump LFL terms 8, 9, 10, & 11 together.

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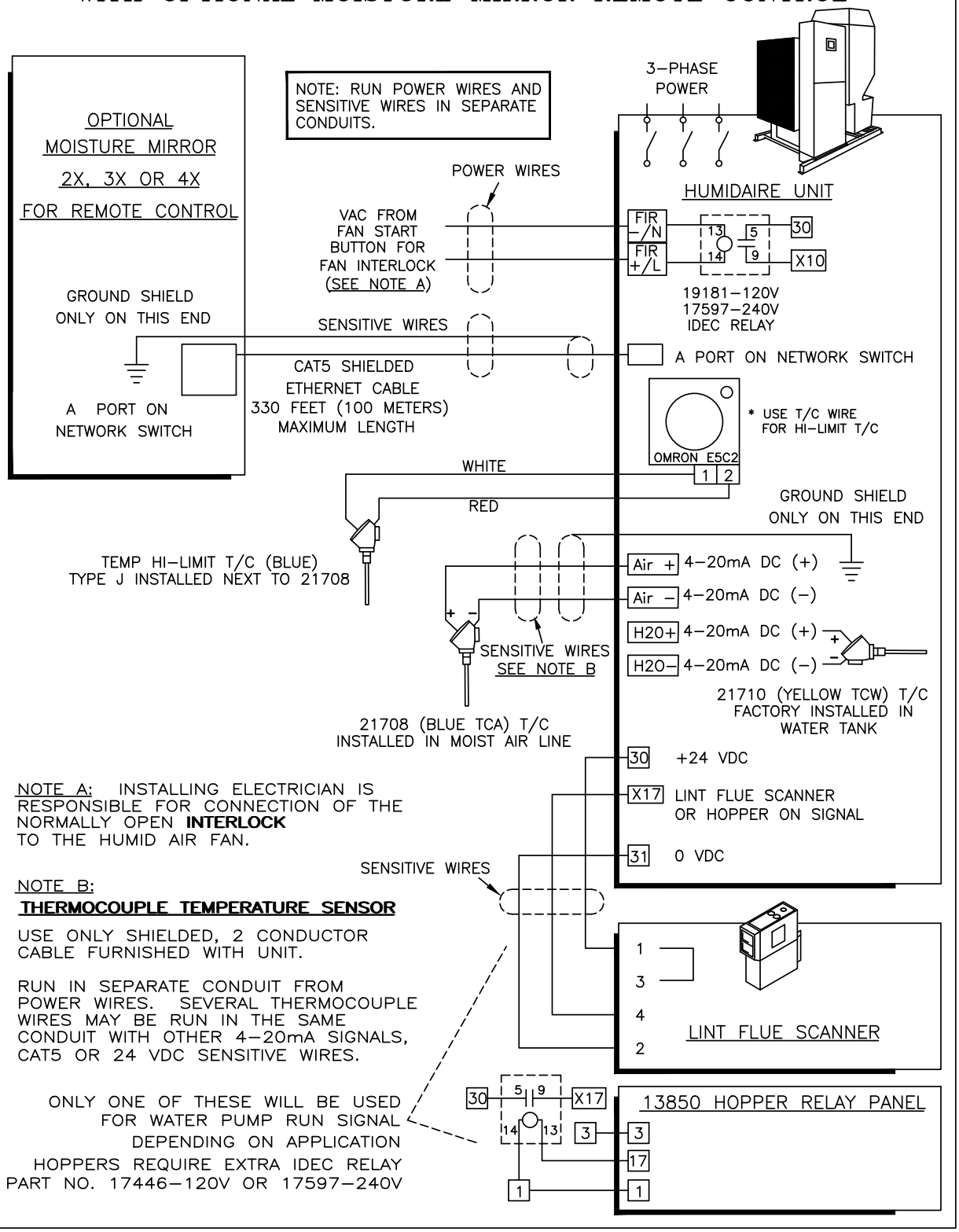
HU-80-1625 AUS "KING MESA" HUMIDAIRE UNIT CA20620
EXTERNAL ELECTRICAL CONNECTIONS 3-13
WITH OPTIONAL MOISTURE MIRROR REMOTE CONTROL



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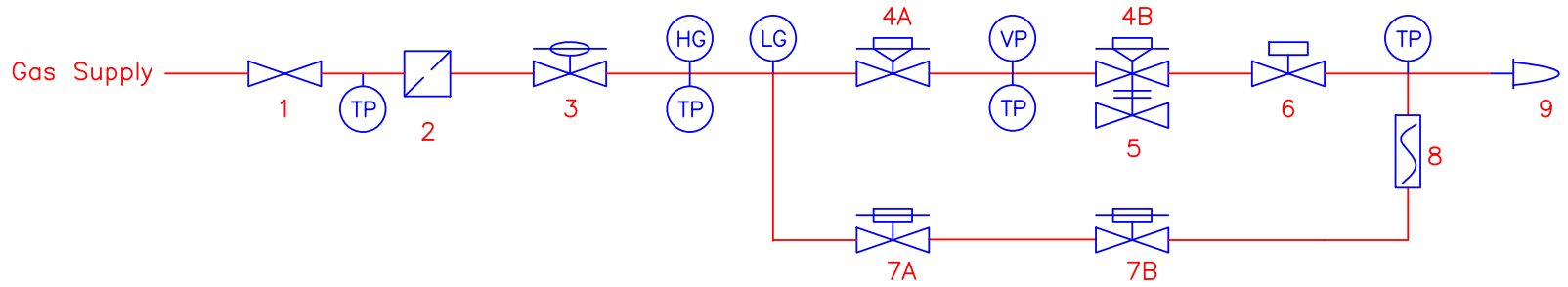

TP – Test Point

HG – Dungs UB 500 A2, 100–500 mbar, 215–246A, Gas High Pressure Switch Manual Reset (SJI PN 24284)

LG – Dungs NB 500 A2, 100–500 mbar, 215–241A, Gas Low Pressure Switch Manual Reset (SIJ PN 24283)

VP – Dungs DD217089A GAO–A2–4–8 Valve Proving Gas Pressure Switch (SJI PN 21332A)

1 – AGA approved ¼ turn manual shutoff valve (SJI PN xxxxx)

2 – MAX–GF60–1–88 Gas Filter (SJI PN 23130)

3 – OPSO Pressure Regulator, Pietro Fiorentini Dival 500 (SJI PN ???)

4 – Dungs D222826 DMV–D512/11 Double Block Safety Valve (SJI PN 21335)

5 – Dungs D224253A CPI–400 Proof of Closure Switch (SJI PN 21328)

6 – Dungs D237617 DMK710/6 Butterfly Valve with 21mm Orifice (SJI PN 21331)

7 – Dungs 46060–26 MV–502 ¼" Pilot Valve (SJI PN 21336)

8 – AGA Approved ⅜" Ball Valve for Pilot Trimming (SJI PN xxxxx)

9 – Samuel Jackson Burner Head (SJI PN 14620)

SAMUEL JACKSON, INC.	
HUMIDAIRE KING MESA AUSTRALIA GAS TRAIN	
REF:	
DWN. BY MCG	DRAWING NO.
DATE NOV 2012	

FOR:

SCALE: NOT TO SCALE